

regulatory attempts to price them differently will be futile. At most, a regulatory regime that attempts to fence users, IXCs, system integrators, and ESPs out of interconnection and unbundled network elements will only fence out those smaller or newer parties who cannot establish a CLECs affiliate. Any IXC, for example, big enough or well-established enough, will be able to create CLEC affiliates and divert access traffic through the interconnection arrangements and network elements for which that CLECs would be eligible whenever the price for those arrangements is significantly lower than access charges. If there are no price differences, and if the services provided under each system are functionally the same, what purpose is served by maintaining an artificial distinction?

If an artificial distinction is created, the Commission must also anticipate that the pricing of § 251 interconnection and unbundled network elements and the pricing of Part 69 access elements will inevitably operate in tandem over time, with the lower rate level for the comparable service or functionality dictating the price of both. To the extent that Part 69 access elements and the interconnection/ unbundled network elements offer the same network features and functionalities, downward pricing pressure on one stemming from reductions in price for the corresponding element should be encouraged.

The ILECs have argued that the interconnection and unbundled network elements established by this rulemaking should be limited in availability to CLECs, to avoid placing the responsibility for interstate access service pricing in

the hands of state commissions pursuant to § 252. The ILECs' professed concern for jurisdictional nicety is misplaced when the statutory scheme has already taken an egg beater to the jurisdictional scheme of the original Communications Act. The new Act does, after all, blithely put the *Federal* Communications Commission in charge of entry into *intrastate* markets. By comparison, state participation in the process for setting the price of using local networks to provide *interstate* access appears quite reasonable, especially when the Act gives the Commission a broad grant of authority in § 251 to establish the pricing standards necessary to prevent states from cross-subsidizing intrastate rates with higher prices for interstate services.

CONCLUSION

The Commission has been given both a challenge and a mandate to create interconnection rules that foster competition. Ad Hoc urges the Commission to meet this challenge by: (1) enacting comprehensive, national rules governing interconnection; (2) unbundling the network elements in a manner that optimizes availability, flexibility, and which removes technical impediments to interconnection and innovation; (3) requiring states to set prices for unbundled elements at or near TSLRIC and, (4) making unbundled features

and functions available to all interested parties -- IXC's, ESP's, System integrators, and users, as well as CLECs.

Respectfully submitted,

**AD HOC TELECOMMUNICATIONS
USERS COMMITTEE**

By: Colleen Boothby

Economic consultants:

Susan M. Gateley
Susan Baldwin
Economics and Technology, Inc.
One Washington Mall
Boston, Massachusetts 02108-2617
(617) 227-0900

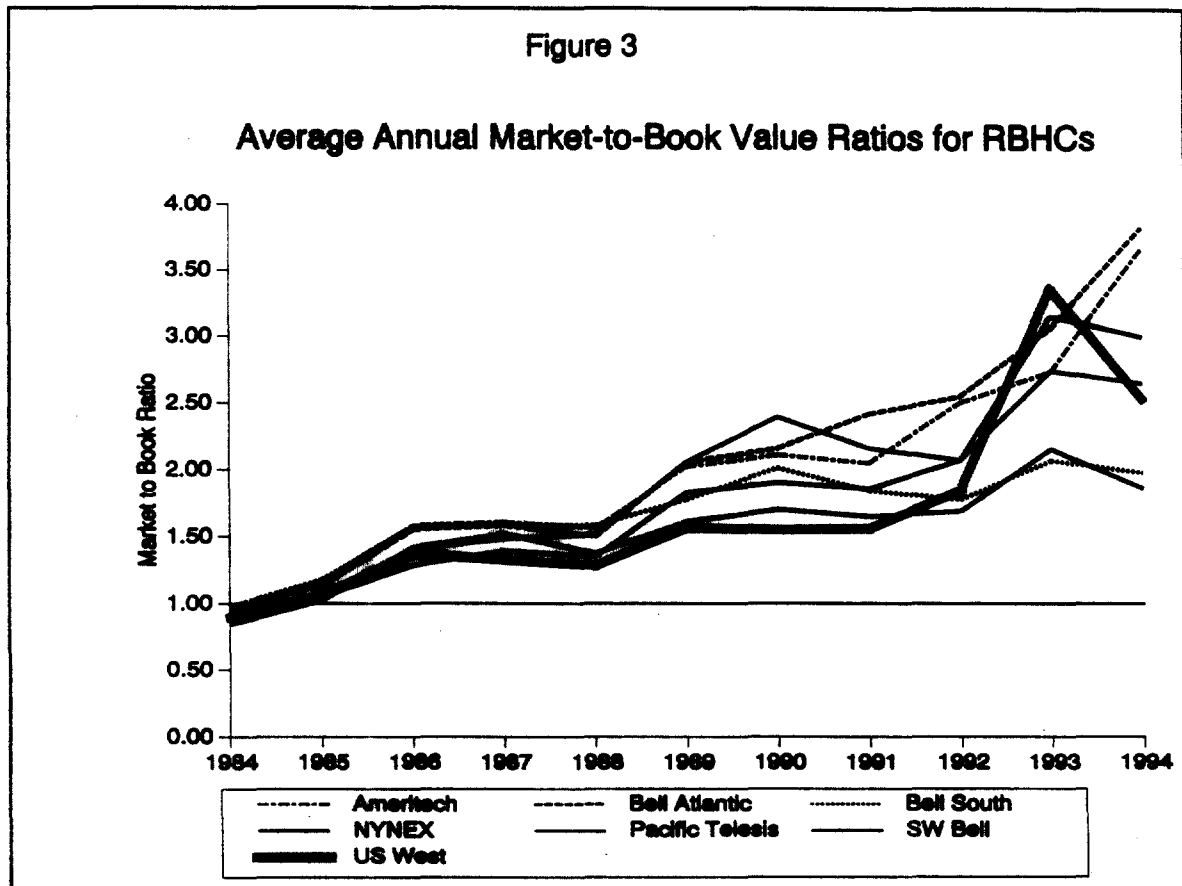
Colleen Boothby
Laura F. H. McDonald
Levine, Blaszak, Block & Boothby
1300 Connecticut Avenue, NW
Suite 500
Washington, D.C. 20036
(202) 223-9019

Its Attorneys

May 16, 1996

comments/200.03

APPENDIX A



Source: Value Line Investment Survey, April 14, 1995

Table 1

LEC MARKET-TO-BOOK RATIOS
(as of December 31, 1994)

Ameritech	3.6
Bell Atlantic	3.8
Bell South	1.9
NYNEX	1.8
Pacific Telesis	2.6
Southwestern Bell	2.9
US West	2.5
Cincinnati Bell	2.1
SNET	2.2
Rochester Telephone	2.0
Source: Value Line Investment Survey, April 14, 1995	

APPENDIX B

Statement of

Dr. Lee L. Selwyn

President

Economics and Technology, Inc.

One Washington Mall

Boston, Mass. 02108

617-227-0900

Before the

United States Senate

Committee on Commerce, Science and Transportation

March 2, 1995

**Statement of Dr. Lee L. Selwyn
President of Economics and Technology, Inc.
Before the United States Senate Committee
on Commerce, Science and Transportation
March 2, 1995**

Mr. Chairman, members of the Committee, thank you for inviting me to appear here today and to present my views on the subject of competition in the local telecommunications market. My name is Lee L. Selwyn. I am President of Economics and Technology, Inc., a telecommunications policy research and consulting firm based in Boston, Massachusetts. I have been professionally involved in the telecommunications regulation and policy field for more than twenty-five years.

The development of effective and sustainable competition in the local telecommunications market is and should be a central goal of federal and state telecommunications policy. Competition has become an established fact of life in several other key segments of the overall telecommunications marketplace -- customer premises equipment, long distance services, and a wide range of information services. Competition in those segments developed and flourished in each case because regulators and policymakers took affirmative steps to create an environment in which that result would be possible; it didn't just happen on its own. And it didn't happen without considerable struggle, either. The entrenched monopolies resisted competition often before it was even noticeable in the marketplace. Like a surgeon whose ideal treatment for a cancer is to remove the diseased tissue before it can spread, the local telephone monopolies have consistently pursued regulatory and business strategies aimed at eliminating embryonic competition before it can become a real threat. It was only through the persistence of regulators and pioneering entrepreneurs that the present level of competition in long distance and premises equipment was able to become established.

Page 2.

Statement of Dr. Lee L. Selwyn
President of Economics and Technology, Inc.
Before the United States Senate Committee
on Commerce, Science and Transportation

History is repeating itself with respect to local competition. Monopoly local telephone companies are maintaining and erecting barriers to entry, just as they attempted to prevent customer premises equipment competition in the 1970s through bogus "Protective Connecting Arrangement" requirements. LECs are refusing to provide the necessary interconnections and network unbundling elements that are essential for local competition, just as they resisted "equal access" for competing long distance carriers prior to the break-up of the Bell System.

Local competition is not going to develop merely through the passage of time. Local competition requires affirmative regulatory action, action that will assure unbundled access to a full range of network functions, true local number portability, equitable mutual compensation arrangements for the interchange of traffic, and strict prohibitions against anticompetitive leveraging of the LEC monopoly to limit, burden, or block entry and development of competition.

But even if all of these impediments are overcome -- which they must be -- LECs will continue to overwhelm any non-LEC rival as long as their own initiatives and competitive responses are effectively insulated from business and financial risk. Regulatory devices such as "price caps" and other so-called "incentive regulation" schemes create a misleading impression of risk-shifting from captive ratepayers to monopoly LECs, when in fact these

Page 3.

Statement of Dr. Lee L. Selwyn
President of Economics and Technology, Inc.
Before the United States Senate Committee
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March 2, 1995

regulatory systems, if not properly designed and balanced, actually create formidable war chests of cash that permit LECs to pursue their rivals with ratepayer, rather than with shareholder, capital. In any event, cost-based pricing of essential monopoly network elements must be maintained, under any regulatory paradigm.

Attached to this statement are two recent papers I have written that explain in detail how these regulatory processes are being used by LECs to frustrate competition and to maintain their fortress monopoly position. Until the LEC monopoly control of essential network elements is eliminated, effective regulation and effective competition are not mutually exclusive policy goals; indeed, the latter cannot be expected to arise in the absence of the former. The formulation and enforcement of effective market rules that can serve to prevent anticompetitive behavior and to promote competition is a far more efficient means for achieving national telecommunications policy goals than the alternative approach that LECs and their consultants have advocated -- the after-the-fact private enforcement of antitrust laws. Regulation and competition can and should work together in a public/private partnership to assure full market access, effective competition, and efficient development of a national telecommunications and information infrastructure that will best meet the needs and goals of the nation as a whole and all of its citizens.

Thank you very much.

ASSIGNING THE COSTS AND SHARING THE BENEFITS OF JOINT-USE PLANT AND OTHER COMMON RESOURCES BETWEEN MONOPOLY AND COMPETITIVE SERVICES

Lee L. Selwyn*

Introduction

It has by now become a recognized and routine practice for local exchange carriers (LECs) to offer services in both monopoly and competitive markets, utilizing the same common plant infrastructure and many common corporate resources in the production of services furnished under a variety of market conditions. Involvement by LECs in monopoly and competitive markets regularly occurs on an integrated basis, often without any structural separation between those organizational units that provide monopoly services subject to ongoing economic regulation and those which are engaged in loosely-regulated or non-regulated competitive ventures. Such integrated operation affords the LEC — and the economy generally — the opportunity to realize potentially significant "economies of scope" through the joint provision of multiple services within the same common resource base. But it also confronts the integrated LEC with numerous perverse incentives to shift costs and revenues in ways that create often large financial and strategic gains for the company's owners while forcing captive customers of the LEC's monopoly services to effectively cross-subsidize its competitive initiatives. While these concerns have been widely recognized, no comprehensive solution, that both protects monopoly ratepayers while assuring maximum gains from integrated production, has yet been offered. Indeed, some of the proposed "solutions" — so-called "price cap" regulation and other "incentive regulation" paradigms — will not only fail to eliminate the misallocation incentives, but may well make it even easier for the integrated LEC to pursue them.

In this paper, we will explore the full range of concerns raised by integrated production of monopoly and competitive services, explain why these are not remedied through "price caps" or other incentive regulation programs, and offer a specific solution that can be implemented as a *prerequisite* to any other regulatory reform initiative. No "incentive regulation" program can be relied upon to accomplish a fair and economically sound assignment of costs and allocation of benefits in the face of pervasive joint production unless the joint cost issues are addressed directly and as a threshold to further regulatory reform.

The "joint cost" problem

* The author is President, Economics and Technology, Inc., One Washington Mall, Boston, Massachusetts 02108 USA.

When a public utility subject to economic regulation, such as a rate of return/rate base regulated (RORR) local exchange telephone company, operates both in regulated monopoly and in less- or non-regulated competitive markets, the firm will confront strong financial incentives to, wherever possible, shift costs toward the monopoly side of its business while moving revenues over to the competitive side. Such tactics would have the effect both of *increasing* the overall revenue requirement¹ for services that remain subject to economic regulation while at the same time *decreasing* the level of revenues actually generated by such services, thereby eroding earnings (from regulated services) and potentially creating an apparent shortfall that, consistent with the normal operation of ROR-type regulation, can be used by the integrated LEC to justify higher rates for its monopoly services. Proponents of price cap or other forms of incentive regulation have argued that these incentives effectively disappear once the linkage between rates for monopoly services and the costs associated with producing them is broken. However, if such misallocations of costs and/or revenues are present *prior to severing this linkage*, the preexisting cost and revenue shifts induced by RORR will simply be perpetuated into the new regime. Ideally, and as a threshold requirement for any incentive regulation program, the "correct" treatment both of embedded and ongoing cost and revenue flows must be determined and implemented.

The misallocation problem becomes particularly acute as new plant additions are increasingly driven by the LEC's desire to offer new competitive services that in general will not be subject to any form of rate regulation. Ideally, such investments should be financially excluded from the "regulated" capital base, but that arrangement is complicated by the fact that, once acquired, the new plant may also be used by the LEC to furnish conventional regulated monopoly services as well as those for which the new facilities were specifically required. In principle, by *permanently* splitting the LEC's asset base and ongoing asset additions as between these two segments, consumers of monopoly services (those monopoly services that would remain subject to economic regulation) can be insulated from such cost and revenue shifts that might otherwise occur in the future.² In particular, separation of the

1. The term "revenue requirement" is generally thought of as describing the aggregate level of revenues that a public utility subject to rate of return/rate base regulation (RORR) will be authorized to recover through rates for its services. As we demonstrate below, the concept of a "revenue requirement" does not evaporate under incentive regulation or "price cap" types of regulatory systems.

2. This type of approach was recently proposed by the Canadian Radio-television and Telecommunications Commission (CRTC). In Telecom Decision CRTC 94-19 issued September 16, 1994, the CRTC adopted a new regulatory framework that, *inter alia*, includes a plan for "splitting" the rate base and associated operating costs and revenue requirements (including depreciation and return on net investment) for Canada's telephone companies into separate "Utility" and "Competitive" segments. The Commission, in that same ruling, indicated its intention to implement "price cap regulation" for services included within the "Utility" segment effective January 1, 1998, and to use the intervening three-year period as a transition to a more cost-based rate structure. In particular, by "splitting" the rate base between these two segments, the Commission seeks to establish an appropriate starting point for price cap regulation, with going-in rates to be based upon a revenue requirement developed exclusively with respect to the

(continued...)

integrated LEC's asset base into "monopoly" and "competitive" components could, if done properly, isolate the capital investments made to support competitive services as well as any price adjustments made for competitive services from those that remain monopolistic, thereby reducing the opportunities for cross-subsidies from monopoly to competitive services that are currently available to integrated telephone companies.³ However, while the idea of assigning the LECs' rate base and associated operating costs in this manner may appear relatively straightforward at a superficial level,⁴ the pervasive presence of joint and common plant and other cost elements in the production of monopoly and competitive telecommunications services would make this a highly complex and far from definitive effort.

However, the alternative to some sort of accounting-based split (or other form of cost allocation) is organizational separation of the monopoly and competitive components into structurally and operationally distinct entities.⁵ Where economies of scope exist as between services furnished in both the monopoly and competitive sectors, however, formal structural separation may be a somewhat draconian measure, in that it could potentially deny consumers and the economy generally the productive efficiencies that are available through joint production of monopoly and competitive services in a common physical and organizational infrastructure. In this paper, we address two central issues pertinent to the separation of the LEC's asset base into monopoly and competitive components:

- We first explore the problems and allocation distortions that regulators will confront in seeking to prevent LECs from introducing competitively-motivated investments

2. (...continued)

monopoly services contained within the "Utility" segment.

3. *Id.* at 58.

4. That this is in fact the prevalent view is demonstrated by the utter simplicity with which the FCC's Part 64 cost allocation rules are stated.

5. Such "structural separation" might take the form of outright divestiture, as in the break-up of the former Bell System, or through the establishment of "fully separated subsidiaries" whose inter-entity transactions and information flows are governed by strict regulatory devices and rules intended to simulate "arm's length" relationships. The regulated and nonregulated activities could be placed in separate subsidiaries, be prohibited from jointly owning or sharing common plant and other resources, and be required to deal with each other at arm's length and on the same basis as any other nonaffiliated firm. Structural separation of either form may or may not preclude potential gains from integration from being realized, depending upon how it is implemented. For example, under the MFJ, the divested BOCs were required to provide AT&T (and other interexchange carriers) with access to their local switching, transport and distribution networks, and were also required (at least initially) to provide billing and collection services, although on a non-rate-regulated basis, such that at least the benefits of these particular joint-use facilities can still be realized. Where the structurally-separated firms compete with one another in certain markets (e.g., intraLATA long distance services), full access to the BOCs' joint-use facilities is not offered, and scope economies are lost.

Assigning the Costs and Benefits of Joint-use Plant

and other costs into the monopoly services rate base, and in maintaining some form of rate base/rate of return regulation (RORR) or variants thereof (e.g., price caps) that is predicated upon such separation.

- Assuming that these problems can be resolved, we then demonstrate why the cost separation effort, while clearly necessary, is by itself not sufficient, and that more must be done to ensure fair competition; specifically, the gains arising from joint use of common infrastructure must be apportioned between the monopoly and competitive categories in an appropriate fashion so as to assure sustainable competition.

The presence of extensive "joint use" common plant and processes in the production of monopoly and competitive services requires more than a one-time "snapshot" of the components and utilization of the integrated firm's rate base as a basis for assigning costs as between monopoly and competitive services.

Part 64 of the FCC's rules, which govern the treatment of LEC assets that are used in common to furnish both regulated and nonregulated services, require that such joint-use plant is to be allocated on the basis of the *relative use* of that joint plant by each of the two categories.⁶ However, a "snapshot" of an integrated LEC's asset base taken at any given moment in time may provide a grossly misleading picture of the actual extent of joint and common costs, in that it will reflect only the then-current apportionment of use of the company's plant, rather than the *economic purposes* for which each element of that plant had been acquired. This is because the mere use of a particular asset to produce a given service does not *per se* imply a direct, *causal relationship* between the service and the cost of the asset in question. Plant acquired expressly for the purpose of providing a competitive service may, once in place, also be used to furnish a monopoly service that had previously been supported by facilities that were removed from service when the new equipment was installed. This may be done because (a) given that the new plant is to be deployed (albeit primarily for the competitive service) anyway, it is then most efficient to also use it to provide the monopoly service, and/or (b) because the integrated LEC, operating pursuant to such a "relative use" cost allocation standard, deliberately shifts some of its monopoly services to the new plant specifically to justify the assignment of a (potentially large) share of its added capital and operating costs to the monopoly segment. However, unless a direct causal link can be shown to exist as between the monopoly service and the investment in the new plant, there is no economic or policy basis for assigning plant in proportion to relative use.

One virtue — perhaps the only one — of the "relative use" allocation standard is that it is "auditable" in some fashion and hence can be feasibly implemented. In fact, however, plant that *appears* to be jointly used to furnish both monopoly and competitive services based upon

6. 47 CFR § 64.

Assigning the Costs and Benefits of Joint-use Plant

a "relative use" analysis made *after the fact* of its acquisition may indeed be attributable in some direct manner to one or the other service category *before the fact* of the expenditure itself. For example, the acquisition of broadband transmission and switching facilities by a LEC in order to support its entry into the video and broadband services market is clearly motivated by that goal, rather than by any legitimate need to enhance the already robust and highly efficient public switched (voice) telephone network. However, if these same facilities, once having been purchased, are then *utilized* to also furnish basic voice and narrowband services, the application of a "relative use" allocator will have the effect of assigning to these inherently monopoly services some (possibly large) share of the capital investment and associated expenses incident to the LEC's broadband/video initiative. Similarly, the deployment of Signalling System 7 (SS7) was driven by the industry's desire to introduce new "intelligent" services such as Caller ID, Enhanced 800 service, and various other network routing and connectivity options *many of which can be and are provided by competing inter-exchange carriers*. Since SS7 facilities are now (or will shortly be) utilized for virtually all long distance (and most local) calls, only a *de minimis* fraction of the aggregate SS7 deployment outlay is effectively "assigned" to the competitive category.

It is thus unreasonable to expect that a static, snapshot approach that addresses only the existing (or then-existing) stock of capital assets and the respective uses made thereof will produce a valid *causality-based* attribution of costs in terms of the *economic purpose for which the plant in question had (in the past) been acquired*. Further, it is even more unreasonable to expect that any policy established for assigning joint and common costs extant within the *embedded* rate base will be remotely relevant with respect to *future* plant additions, because extrapolations based upon *existing* plant uses and assignments (which themselves may not be accurate) will have even less basis when applied to acquisitions yet to come, where the assignment should more appropriately be determined by the factors driving the investment decisions themselves.

Because the outcome of this process will have a far-reaching and material impact upon the nature and structure of costs for monopolistic and for competitive components of the integrated utilities' business, the dominant telephone companies are strongly motivated to affirmatively steer regulators in the direction that creates the greatest overall financial and strategic benefit for these carriers, and to advance policies whose effect would be to retain as large a portion of the investment base as possible in the monopoly category. In this way, the integrated LEC would be able to:

- Generate maximum possible revenues from its captive monopoly services;
- Minimize the cost basis for its competitive services, thereby affording it substantial pricing flexibility in responding to or staving off potential competition; and

Assigning the Costs and Benefits of Joint-use Plant

- Capture the greatest possible level of profit from its competitive services, where prices and earnings levels are not subject to regulatory constraint.

Moreover, where the same cost assignment principles are used with respect to *future additions* to the integrated firm's investment base, by arguing for maximum assignment of cost to the monopoly category, the dominant LEC can:

- Force monopoly services customers to bear the bulk of the costs and the financial risks of new and, in some cases, highly speculative investments;
- In some cases support an economic rationale for the investment strategy where a direct discounted cash flow cost/benefit analysis would indicate that the investment plan should be rejected; and
- To the extent that any profits do ultimately arise from "nonregulated services" that are made possible with the availability of the new resources, assure that such profits flow to and are captured by the *owners of the utility company even if for both regulated and nonregulated services combined the investment produces a net loss for the company as a whole.*⁷

Our purpose at this time is not to debate the efficacy of particular investment initiatives or their appropriateness for inclusion in the monopoly column. Rather, our present objective is to address the specific policy issues arising from the joint provision of monopoly and competitive services on an integrated basis, where the attribution of costs to each service category is complicated by:

- (a) the presence of large amounts of joint and common plant and the resulting consequences for the incremental costs of new (competitive) services; and by
- (b) several *mechanical* aspects of the regulatory process itself that in the past have permitted and that will in the future continue to allow an integrated utility to acquire

7. It is possible that the demand for and revenues potentially available from a given competitive service might not be sufficient by themselves to support the investment required for entry *unless some portion of the investment can be shifted to the monopoly category*, where its recovery can be largely assured irrespective of the economic merit of the investment itself. If this is the case, the aggregate result for the firm as a whole would be a net loss, even though the competitive service *appears* profitable by virtue of not being required to support the entire cost of the underlying capital assets. Since the integrated firm's management and shareholders can be made whole by merely increasing rates charged for monopoly services (which would otherwise be in a shortfall condition due to the infusion of new rate base investment with no commensurate revenue increase), the outcome of this process will be higher rates for monopoly services overall. Moreover, price cap regulation does not eliminate this problem, and may actually perpetuate it, if the price adjustment mechanism itself is based upon historic conditions in which precisely such cost-shifting practices had been taking place.

Assigning the Costs and Benefits of Joint-use Plant

specific additions or upgrades to its plant for purposes of furnishing competitive services, but that have the effect of increasing the cost basis for those services that will remain in the monopoly category.

In the following discussion, we shall explore these mechanical properties of existing regulatory cost accounting and depreciation practices, and show how they permit and frequently *conceal* cost shifts from competitive to monopoly services. In establishing rules that would enable regulators to identify and to exclude for regulatory purposes those portions of an integrated utility's rate base that were acquired for purposes of furnishing competitive services, the regulatory process itself must come to recognize and to correct for the effects of these properties.

Regulatory cost accounting and depreciation accrual processes both permit and conceal cost shifts from the competitive to the monopoly sectors of integrated LECs.

"Rate of Return Regulation" ("RORR") and recent variations thereon has served as the basis for establishing the revenue requirement for telephone utilities under its jurisdiction. The nominal "replacement" of RORR with some sort of "price cap" or other "incentive regulation" regime does not fundamentally change the basic RORR paradigm, because many of the operative parameters of a price cap system will necessarily be rooted in and/or driven by the pre-existing and ongoing influences of RORR principles, not the least of which is the "going in" rate level, the "productivity offset" inherent in the annual price adjustment formula, and the standards under which the efficacy of the price cap program may be evaluated over time.

The cost and revenue shifting incentives that exist when an integrated firm provides both regulated and nonregulated services impose risks and burdens both upon monopoly services customers and upon competing providers of the utility's nonregulated services. Accordingly, if such integrated operation is to be permitted without structural separation, a threshold principle should be adopted and strictly enforced:

Under no circumstances should customers of monopoly services be made worse off than they would otherwise be because monopoly and competitive services share common plant resources. Any actions taken by the utility that would have this effect should be resolved so as to impose all of the added burden squarely on those competitive services that caused the added costs to be incurred or other burdens to be suffered.

In developing rules and processes for excluding investments and other costs motivated by competitive services from the integrated LEC's asset base, it is important that regulators recognize and understand the factors and devices that have worked to establish the existing regulatory "rate base" as well as the manner in which it will evolve over time. Accordingly,

in examining the implications of pervasive joint and common costs, we first examine the forces and mechanisms that have collectively produced the existing condition.

Under RORR as well as under a future price cap regime that has its roots in the present regulatory system, the aggregate "revenue requirement" to which a utility is entitled is driven by several factors. First, the utility is entitled to earn a "reasonable" rate of return on the *net book value* of its investment — the "net rate base." Second, the utility is permitted to recover through rates, dollar for dollar, all *depreciation charges* taken with respect to its gross plant. Finally, the utility is permitted to recover through rates, dollar for dollar, all out-of-pocket operating expenses that it incurs in the course of furnishing service.

The actual means by which such "revenue requirement" costs are recovered is through the set of prices the utility charges for its various services, known generally as its "rate design." Historically, the structure of rates for individual services was not set directly in relation to the cost assignable to each such service, but in recent years utilities and regulators in the US and elsewhere have sought to make their rates more "cost-based."⁸ However, because of the large amounts of joint-use plant and other common resources that are utilized to furnish a large number of different services, there is no single "correct" rate design that will automatically emerge from the application of cost-based pricing principles.⁹

One of the most serious shortcomings of the existing rate-setting process is its utter failure to relate prices to *changes* in the stock of plant and other corporate resources that may be influenced by individual services and service markets. In part this is made necessary by the extremely large capacities and high fixed costs associated with many network elements: Total costs generally do not vary much, if at all, with small changes in the quantity of output. As such, in developing costs for *individual services* it is often necessary to calculate *average unit costs* by dividing the total cost of the resource (which itself may be estimated using either embedded or incremental cost methods) by the number of units of capacity that the resource supports. Accordingly, most cost assignment processes, whether of the "embedded" or "incremental" variety, tend to assign any costs that cannot be associated directly with a particular service and/or a particular customer on the basis of some type of "relative use" measure, where "relative use" is determined by a snapshot taken either after the joint-use plant is already in place or based upon projections of the relative uses of the resource once it is put in place, rather than on the basis of the relative *need* for that joint plant by individual

8. For example, the California PUC's "Implementation and Rate Design" ("IRD") ruling, D. 94-09-065, was intended to achieve a more cost-based rate design on a "revenue-neutral" basis for Pacific Bell and GTE-California.

9. That is not to say that some rate designs are not better than others in accurately reflecting costs and cost causality. For example, recognition of the end-user subscriber line (the "local loop") as a direct cost of serving a specific customer rather than as a joint cost common to both local and long distance service has led to the adoption of "rate rebalancing" policies under which the subscriber line cost is recovered through fixed monthly charges imposed directly upon the end user rather than through usage-based elements of local and long distance rates.

Assigning the Costs and Benefits of Joint-use Plant

services.¹⁰ But it is that *need*, rather than after-the-fact *use*, that drives the decision to acquire plant in the first place. One immediate consequence of this process is that assets can be purchased for a specific purpose, but their costs can be reassigned *after-the-fact* of that acquisition to other services simply by transferring preexisting services/customers to the new facilities.

This ability to assign costs on the basis of broad averages and relative utilization affects the treatment of two types of rate-base-driven costs in particular — *depreciation* and *excess capacity*. These cost elements are rarely if ever disaggregated as between monopoly and competitive services, but instead directly follow the assignment of the underlying plant itself. To the extent that *competitive services* actually impose disproportionately larger depreciation and excess capacity costs than do services placed in the monopoly category, the effect of this process is to shift costs engendered by competitive services squarely into the monopoly column.

Depreciation. Depreciation is the process by which a utility recovers the cost of fixed assets that it acquires in order to furnish its services. Depreciation charges are recorded for a period of years *after* the initial capital outlay is made; hence, *current* depreciation charges represent recovery of *past* capital investment. Telephone companies treat their depreciation accruals on a *group basis* by assigning individual assets among a relatively small number of plant categories. Depreciation rates are reviewed and represetcribed periodically, typically on a three-year cycle, based upon the pattern of plant additions and retirements. All else being equal, a consistent pattern of accelerating the retirement of embedded plant will have the effect of reducing average service lives of assets within the class, and hence will result in higher annual depreciation charges. Note that the group classifications utilized for depreciation purposes are orthogonal to the "monopoly/competitive" distinction; thus, plant placed in any particular depreciation class (e.g., central office equipment, outside plant, etc.) can be and is used jointly to support both monopoly and competitive services. And therein, of course, lies the problem: A particular plant replacement decision may be driven entirely by, for example, the desire on the part of the integrated firm to offer a particular type of competitive service, but because the plant class supports both monopoly and competitive services, the increased annual depreciation accruals that are engendered by the replacement decision will flow to *both* types of services, and not solely to the competitive category. This process can be illustrated by several examples:

- An analog electronic central office currently serves 20,000 residential and business "Plain Old Telephone Service" ("POTS") customers. The switch was installed in 1985 and has an average useful life (in terms of physical serviceability) of at least 20 years. Accordingly, at the time of its acquisition ten years ago, a 20-year depreciation schedule was used, implying an annual depreciation charge of 5%

10. 47 CFR § 64.

Assigning the Costs and Benefits of Joint-use Plant

depreciation schedule was used, implying an annual depreciation charge of 5% (assuming zero net salvage value at the end of the switch's life). However, confronted with increased competition from digital PBX systems that support a number of advanced features being demanded by the business telephone systems market and that could not be supported in an analog switch, the telephone company has decided to replace all of its existing analog switches with new digital machines. In this particular office, a new switch with a 25,000 line capacity is acquired at an initial capital cost of \$10-million. The in-place analog switch is retired, the company transfers all 20,000 of the existing "POTS" subscribers to the new machine, and uses the additional capacity to provide 5,000 lines of centrex service. Thus, while the entire \$10-million of investment was *motivated* by the decision to compete in the centrex market, only about 20% of that outlay, or about \$2-million, will actually be assigned to the competitive centrex service. In addition to bearing 80% of the cost of the new switch, customers of monopoly services will also be called upon to compensate the company for increased depreciation charges on its *embedded* asset base, because this program of early switch retirements has the effect of shortening the average remaining service life of in-place analog central office equipment, resulting in increased annual depreciation charges for that class of plant.

- The telephone utility desires to enter other new telecommunications services markets, such as video. To do this, it can either (a) construct new, entirely dedicated facilities to support the new services while continuing to utilize its existing resources to continue to provide basic (voice and narrowband) services, or (b) it can remove and replace the existing plant with new facilities that are capable of supporting both the existing monopoly service functions as well as the new competitive services. Under option (a), all embedded plant would continue to be charged to existing (largely monopoly) services, and there would be no acceleration of retirements or increases in depreciation accruals. However, in that situation, the new services would be required to carry 100% of the new investment. Under option (b), retirement of embedded plant would be accelerated, depreciation charges applicable to monopoly services would increase, and the new competitive video/broadband services would be responsible for only a (probably small) share of the new network investment costs.

These examples demonstrate how cost attributions based upon relative use, rather than upon intended purpose, can overstate costs in the monopoly category while understanding those that are properly caused by competitive initiatives. In addition to the problem of mis-assignment of new investment costs, the processes of rate base accounting and depreciation will also inappropriately impose added costs on the monopoly sector for early retirement of the plant that is being replaced. In both of the above examples (and there are others that can be cited),

the premature retirement¹¹ of in-place plant has the effect of increasing depreciation rates for all plant in that same class, thereby elevating costs both for monopoly and for competitive services. However, by assigning a portion of the increased depreciation charges to monopoly services, the *effect* of the competition-driven capital acquisition is to *shift* a portion of the acquisition cost to the monopoly category.

It has been argued that, since the increased depreciation charges are applicable to *embedded* plant (i.e., to the plant that is being prematurely retired rather than to the plant that is being newly acquired), and since that plant was primarily (if not exclusively) used to furnish monopoly services, the increased charges should appropriately flow to those same monopoly services *even where the replacement equipment has joint monopoly/competitive uses*. The fallacy in that theory is that, while the original decision to acquire the in-place plant was (presumably) driven by the *monopoly* services that such plant was intended to support at the time it was acquired, the decision to *replace and to prematurely retire* that plant is driven by the integrated firm's interest in pursuing competitive markets. An economic plant replacement decision will be driven by a number of factors, including among other things the increased revenue-generating opportunities that may become available as a result of the new plant's ability to support new and different services. All other things being equal, if the competitive impetus (in the form of the prospect of added revenues) were not present, it is likely that many, perhaps most, plant replacement and upgrade actions would *at a minimum* be postponed or, in some cases, *not be made at all*. All other things being equal, if plant is not retired and replaced as rapidly as it would be in the presence of competition, depreciation rates will not be as high as they would be but for the presence of competition. *Accordingly, it is necessary, in apportioning the ongoing revenue requirement between the monopoly and competitive categories, to assign to the former only those ongoing depreciation charges that would have prevailed had the competitively-driven replacements and upgrades not taken place.* The telephone utilities' unique ability to apply *average*, rather than *disaggregated*, depreciation charges to both the monopoly and competitive service categories effectively permits them to force monopoly customers to bear the costs of competitively-driven early replacements of embedded plant.

Excess capacity. A similar type of averaging occurs in the case of excess or "spare" capacity. The costs of excess (sometimes described as "spare," "unused," "reserved," or "growth") capacity are also typically assigned, explicitly or implicitly, to individual services *in the same proportion as in-service capacity* irrespective of the relative need for, or expected growth in, capacity that may be required by these two categories of service.

Suppose that a particular fiber optic cable with a total capacity of 5,000 voice-grade channels is acquired and installed by the integrated LEC at a cost of \$100,000. Initially,

11. That is, a pattern of retirements that are more rapid than the original mortality curve upon which the original depreciation rate schedule was based.

only 1,000 of these channels will be placed in use, 850 for monopoly services and 150 for competitive services; suppose further that (to keep this example simple) zero growth in the demand for the monopoly service is anticipated, but that over time considerable (although perhaps unknown) growth in demand is anticipated for the new competitive offering. There are several means by which the joint cost of this cable can be split between the monopoly and competitive categories. If the joint cost of this cable is assigned on the basis of in-service relative use, then the monopoly/competitive split would be \$85,000/\$15,000. This approach — where the total cost of the resource is spread across all *in-service* capacity — results in an *implicit* assignment of excess capacity in the same ratio as in-use capacity.¹² The problem with this method of assignment is that, while the *initial* apportionment of usage may be 85/15, over time the growth in the *competitive* service will be the *sole* beneficiary of the 4,000 channels of (currently) excess capacity. Yet only 15% of the investment cost required for that (excess) capacity will be carried in the competitive column.¹³

The above example highlights the fact that the relative need for excess capacity may differ significantly as between monopoly and competitive services. Typically, competitive services have proportionately greater need for spare capacity either because they are growing at a faster rate than monopoly services, or because their demand is less stable such that, over any particular distribution or transmission route, there is greater volatility in demand for capacity over any given interval of time.¹⁴ A decision by a dominant LEC to compete in a relatively

12. Alternatively, the per-channel cost could be calculated on the basis of total capacity (5,000 channels), in which case the per-channel cost would be \$20 (i.e., \$100,000/5,000). In this case, assignment of costs on the basis of \$20 per channel would cover only \$20,000, requiring that the \$80,000 be spread in some manner. If this is done merely by spreading the 4,000 unused channels across the 1,000 in-use channels, the result is the same \$100 per working channel assignment — viz.: each \$20 in-service channel would also carry \$80 worth of unused channels. Thus, if the \$100,000 total cost is simply divided by the 1,000 in-use channels, the per-channel cost would be \$100; the 85 monopoly channels, at \$100 each, would produce the total assignment to the monopoly category of \$85,000. Under either of these approaches, if 850 in-service channels are used to support monopoly services while 150 are used by competitive services, the "split" would still be \$85,000/\$15,000.

13. This problem is not cured by a subsequent reapportionment of costs based upon the then-current monopoly/competitive split, because unused capacity that is ultimately needed for and used by the competitive service will be carried on the monopoly side of the ledger until it is ultimately (physically) shifted to support the competitive service. In the present example, since all of the growth is expected to occur in the competitive sector and none at all for the monopoly service, if anything 100% of the initially unused capacity should be assigned to competitive services. This would not of course be the result of an in-service-based assignment.

14. The demand for basic residential access is highly predictable over time, because the number of individual housing units along any given distribution cable route can be known or at least predicted with relative certainty. By contrast, the options available to larger business customers in large downtown office buildings make each customer's (and hence each building's) demand far more volatile and less predictable over time. If a 5,000-line centrex system is replaced by a customer premises PBX requiring only 500 PBX trunks, 4,500 loop pairs will have been made idle, and the amount of excess capacity in the outside plant serving that building will have undergone a considerable increase.

Assigning the Costs and Benefits of Joint-use Plant

volatile market segment, which may require and/or engender larger proportionate amounts of "excess" capacity, would have the effect of increasing the level of costs assigned to monopoly services.

Like the case with depreciation, the costs of spare common plant, by being assigned in precisely the same manner as in-service common plant, is effectively shifted to monopoly services when new (and often highly underused) plant is acquired for purposes of responding to competitive pressures. If plant utilization rates would be higher, all else being equal, absent the presence of competitively-driven plant additions, then any *differential* in utilization that exists as between the pure monopoly case and the hybrid monopoly/competitive joint production scenario must be assigned *in its entirety* to the competitive category.¹⁵

In the foregoing discussion, we have emphasized the need to avoid implicitly shifting costs motivated by the utility's desire to offer competitive services into the monopoly category through the depreciation and joint cost assignment processes. However, even if that objective can be successfully achieved, there remains the question of how the gains arising from the joint use of a common infrastructure both by monopoly and competitive services should be apportioned between these two categories. We shall turn now to that question.

15. Subscriber outside plant utilization rates have been declining steadily since the mid-1970s. In 1983, the California PUC found that Pacific Bell's plant utilization was inappropriately low, and imposed an explicit "underutilization penalty" on the Company that was to remain in effect until the problem was corrected. California Public Utilities Commission, D.83-12-025, 13 CPUC 2d, at 479. This phenomenon of underutilization occurred throughout US local telephone companies. In the mid-1970s, the average loop plant utilization for the Bell System companies was reported in the 70% range. See Selwyn, Lee L., Patricia D. Kravtin, and Paul S. Keller, "An Analysis of Outside Plant Provisioning and Utilization Practices of US West Communications in the State of Washington," prepared for the Washington Utilities and Transportation Board, March, 1990, Attachment 8. By the mid-1980s, subscriber outside plant (OSP) occupancy for the BOCs had noticeably declined. For example, the loop plant utilization reported by Pacific Northwest Bell — Washington (now US West Communications, Inc.) declined from 69.9% in 1975 to only 60.8% in 1988. ETI found that the low plant utilization rates present in Washington State could be explained by the precipitous drop in the demand for Centrex service that began shortly after 1980. ETI noted that OSP utilization levels would have remained essentially constant had the demand for Centrex (relative to PBX trunks) remained at pre-1980 levels. Unlike PBX systems that require a relatively small complement of loop pairs (PBX trunks) to serve a much larger number of individual PBX station lines (for a station:trunk ratio that is typically in the range of 8:1 to 12:1, depending upon overall system size and traffic patterns), Centrex service requires one loop pair for *each* station line since the switching function takes place at the telephone company central office. ETI speculated that the BOC in that state had continued to construct subscriber outside plant assuming that the same loop demand density would persist. Thus, US West continued to deploy plant to serve new commercial development on the basis that at some point a customer at that business location would want to order Centrex. This policy, of course, resulted in large quantities of unused ("spare") outside plant, whose costs would have to be spread to other services.

The economic gains and other benefits arising from joint use of common plant by both monopoly and competitive services should be used to defray the costs of the common infrastructure and other common resources of the LEC.

Assuming that it is possible to resolve the problems of cost attribution and the impact on existing monopoly services of costs incurred for the purpose of entering competitive markets, the regulator must still adopt policies designed to assure fair competition and an appropriate apportionment of the economic gains arising from the joint use of common resources by the monopoly and competitive units of the integrated LECs. In that regard, the following specific issues must be addressed:

- (1) To the extent that the integrated LEC is uniquely able to exploit existing and potential shared resources for purposes of introducing and providing new nonregulated services, to what extent should it be required to make such shared resources available to its competitors, or alternatively, to what extent should the LEC's owners, rather than the totality of its customers, be allowed to derive the economic benefits resulting from such exploitation?
- (2) To the extent that the introduction of competition in selected segments of the telecommunications market (e.g., intraLATA toll, local exchange service, special access) could erode the earnings previously available to integrated local telephone utilities to defray the joint and common costs of the basic network infrastructure, how much should competitors continue to be responsible for "making the LEC whole" for any loss of such revenues or, more precisely, how should "contribution" from competitors toward the joint and common costs of the network be calculated?

As we shall show, the overriding goal of economic efficiency and maximizing the productivity of the nation's economic resources requires that integrated telephone utilities make available to other telecommunications providers the efficiencies inherent in their joint and common plant and operations, and that any economic gains arising from the integrated LEC's joint production of monopoly and competitive services be used to offset any attrition of earnings or "contribution" in the monopoly segment and to defray the overall common costs of the LEC's integrated operations. Under this approach, the LEC's competitive services will in effect be responsible for recovering the stand-alone costs inherent in furnishing such services, while monopoly services will benefit from lower costs because they will carry only those costs that would not otherwise be required to support competitive services. In this way, the costs of monopoly services will be lower, and this benefit will flow broadly throughout the economy as a whole.

To the extent that the joint production of monopoly and competitive services creates efficiencies that would not otherwise be available to the telephone company or to its customers if the two service categories were subject to full structural separation, the economic